ABSTRACT OF THE DISCLOSURE

A method and an apparatus for detecting a necking error during semiconductor manufacturing. At least one semiconductor wafer is processed. Metrology data from the processed semiconductor wafer is acquired. Data from a reference library comprising optical data relating to a poly-silicon formation on a semiconductor wafer is accessed. The metrology data is compared to data from the reference library. A fault-detection analysis is performed in response to the comparison of the metrology data and the reference library data.